

# HALLIBURTON

iCem<sup>®</sup> Service

## **TERRA ENERGY PARTNERS**

**For: Terra**

Date: Friday, July 21, 2017

**TR 413-24-597 Production PJR**

API# 05-045-23472-00

Sincerely,

**Grand Junction Cement Engineering**

## 1.0 Real-Time Job Summary

## 1.1 Job Event Log

Type	Seq. No.	Graph Label	Date	Time	Source	Pass-Side Pump Pressure (psi)	Downhole Density (ppg)	Combined Pump Rate (bbl/min)	Pump Stage Total (bbl)	Comments
Event	1	Call Out	7/21/2017	03:00:00	USER					REQUESTED ON LOCATION @ 800
Event	2	Pre-Convoy Safety Meeting	7/21/2017	06:00:00	USER					ALL HES PRESENT
Event	3	Crew Leave Yard	7/21/2017	06:10:00	USER					1 F550, 1 PUMP TRUCK & 1 660 BULK TURCK
Event	4	Arrive At Loc	7/21/2017	08:45:00	USER					RIG RUNNING CASING
Event	5	Assessment Of Location Safety Meeting	7/21/2017	09:00:00	USER					MET WITH COMP REP, KARL, AND WENT OVER NUMBERS AND JOB PROCEDURE. WALKED AROUND LOCATION AND COLLECTED WATER SAMPLE (PH- 7, CHLORIDES- 0, TEMP- 65F). COMP REP WAS OFFERED SDS FOR ALL CHEMICLES USED BY HES.
Event	6	Pre-Rig Up Safety Meeting	7/21/2017	09:15:00	USER					ALL HES PRESENT
Event	7	Rig-Up Equipment	7/21/2017	09:20:00	USER					HES RIGGED UP EQUIPMENT WITHOUT ENTERING RED ZONE.
Event	8	Pre-Job Safety Meeting	7/21/2017	10:20:00	USER					ALL HES AND RIG CREW PRESENT
Event	9	Start Job	7/21/2017	10:57:00	COM6					TD 10442', TP 10432', SJ 29.13', OH 8.75'', CSG 4.5'' 11.6#, MUD 8.8 PPG. RIG CIRCULATED WELL FOR APPROX 1 HR @ 10 BPM WITH 900 PSI.
Event	10	Prime Pumps	7/21/2017	10:58:30	COM6	33.00	8.28	1.00	2.0	8.33 PPG FRESH WATER
Event	11	Test Lines	7/21/2017	11:02:14	COM6	5239.00	8.35	0.50	0.50	ALL LINES HELD PRESSURE AT 5239 PSI

Event	12	Pump Spacer 1	7/21/2017	11:08:19	COM6	20.00	8.31	4.00	10.3	FRESH WATER (10 BBL), 8.33 PPG
Event	13	Pump Spacer 2	7/21/2017	11:12:16	COM6	50.00	8.30	4.10	20.0	MUD FLUSH III (20 BBL), 8.4 PPG
Event	14	Pump Lead Cement	7/21/2017	11:17:29	COM6	654.00	12.43	8.10	199.5	NEOCEM CEMENT 575 SKS (199 BBLs), 12.5 PPG, 1.94 FT3/SK, 9.58 GAL/SK
Event	15	Check weight	7/21/2017	11:20:18	COM6					WEIGHT VERIFIED VIA PRESSUREIZED MUD SCALES
Event	16	Pump Tail Cement	7/21/2017	11:47:22	COM6	369.00	12.94	8.10	329.1	NEOCEM CEMENT 890 SKS (329 BBLs), 13 PPG, 2.07 FT3/SK, 9.43 GAL/SK.
Event	17	Shutdown	7/21/2017	12:38:32	USER					END OF CMT
Event	18	Clean Lines	7/21/2017	12:39:47	USER					WASH UP PUMPS AND LINES
Event	19	Drop Plug	7/21/2017	12:47:43	USER					PLUG WENT, VERIFIED BY CO REP.
Event	20	Pump Displacement	7/21/2017	12:48:33	COM6	623.00	8.37	9.80	0.3	8.34 PPG KCL WATER (161.3 BBLs) 1 GAL MMCR & 3 BAGS BE6
Event	21	Slow Rate	7/21/2017	13:05:13	USER	1367.00	8.31	4.00	156.1	SLOW RATE TO 4 BPM PER CO REP TO LAND PLUG
Event	22	Bump Plug	7/21/2017	13:09:16	USER	2534.00	8.33	4.00	168.8	LAND PLUG AT 1250 PSI, BROUGHT UP TO 2580 PSI
Event	23	Check Floats	7/21/2017	13:11:06	USER	2589.00	8.34	4.00	168.8	FLOATS HELD, 1 BBL BACK TO TRUCK
Event	24	End Job	7/21/2017	13:13:00	USER					PIPE WAS NOT RECIPROCATED DURING THE JOB, AIR RAN @ 1500 UNITS FROM START- LAST 40 BBL OF TL CMT, 400 UNITS FROM LAST 40 BBL OF TL CMT- 80 BBL AWAY OR DISP. AND THEN TURNED OFF. 0 BBL CEMENT BACK TO SURFACE
Event	25	Rig-Down Equipment	7/21/2017	13:17:56	USER					ALL HES PRESENT
Event	26	Post-Job Safety Meeting (Pre Rig-Down)	7/21/2017	13:19:51	USER					THANK YOU FOR CHOOSING HALLIBURTON CEMENT, CHRIS SMITH AND CREW
Event	27	Pre-Convoy Safety Meeting	7/21/2017	13:50:00	USER					ALL HES PRESENT

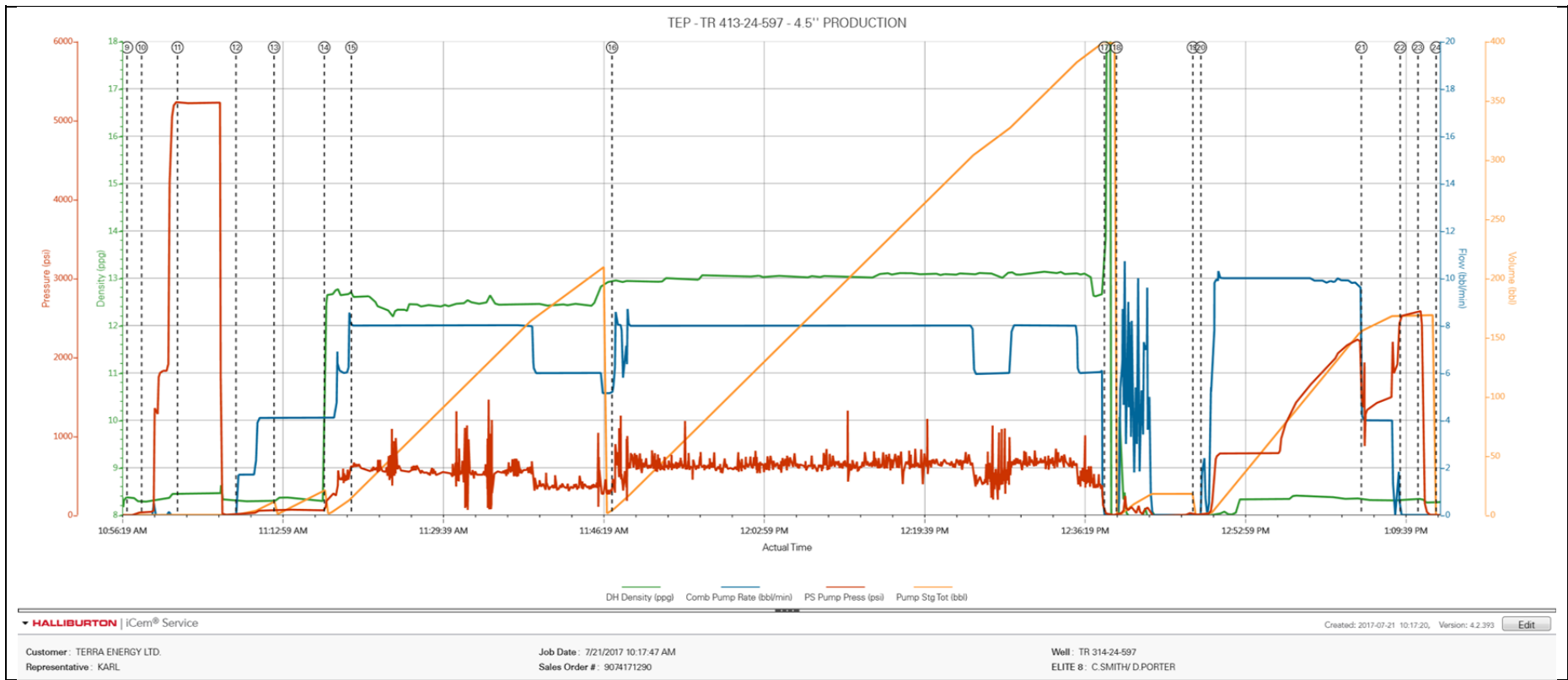
Event    28    Crew Leave Location    7/21/2017    14:00:00    USER

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ALL HES PRESENT

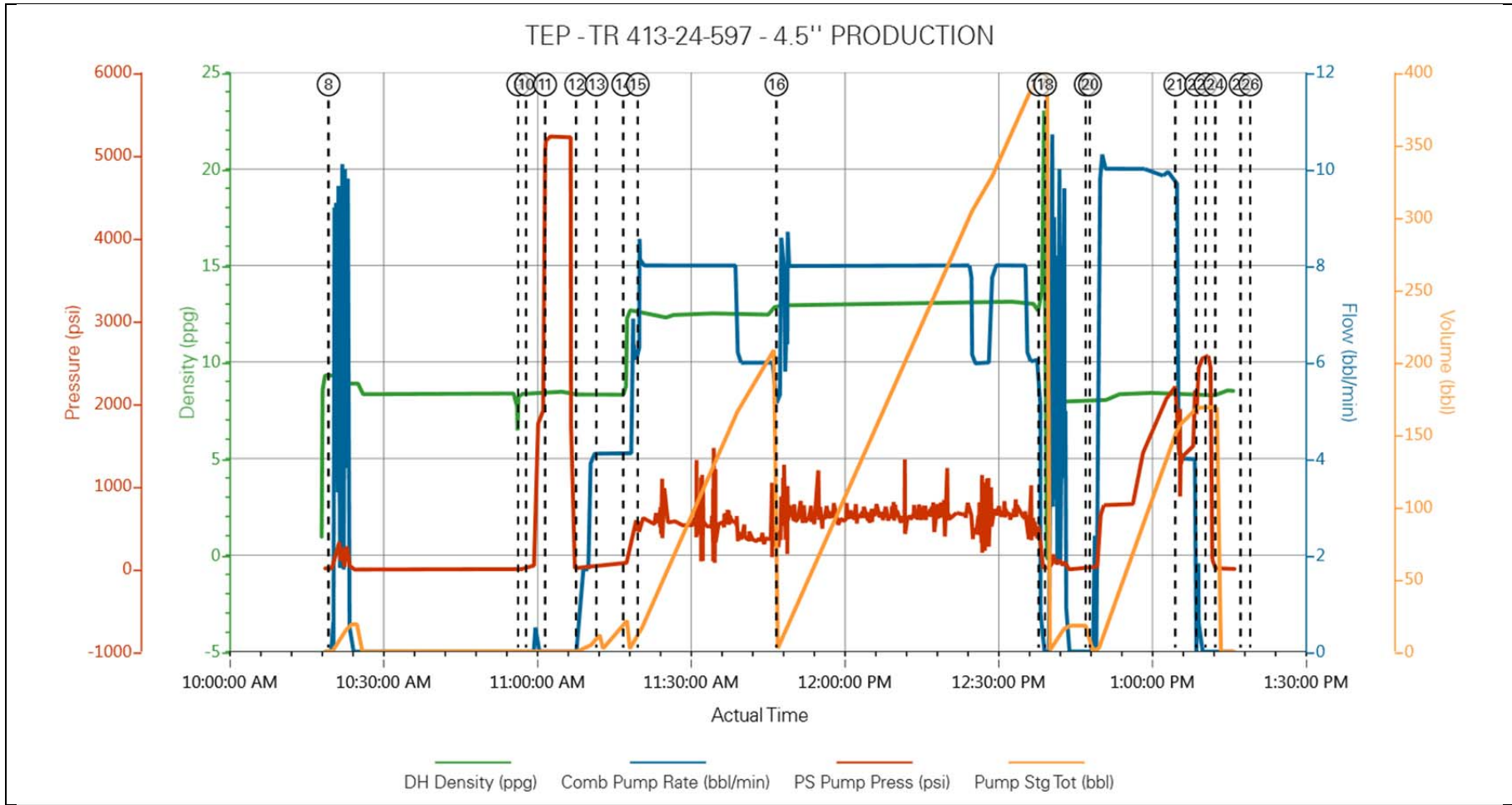
2.0 Attachments

2.1 CHART 1.png



3.0 Custom Graphs

3.1 Custom Graph



# HALLIBURTON

## Rockies, Grand Junction

### Lab Results- Lead

#### Job Information

<b>Request/Slurry</b>	2401769/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	17/JUL/2017
<b>Submitted By</b>	Aaron Katz	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Terra Energy Partners	<b>Location</b>	Garfield	<b>Well</b>	TR 413-24-597

#### Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10654 ft	<b>BHST</b>	124°C / 256°F
<b>Hole Size</b>	8.75 in	<b>Depth TVD</b>	10365 ft	<b>BHCT</b>	91°C / 195°F
<b>Pressure</b>	6560 psi				

#### Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	10.4 lbm/gal
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#### Cement Information - Lead Design



<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NoeCem Lead				Slurry Density	12.5	lbm/gal
						Slurry Yield	1.941	ft3/sack
						Water Requirement	9.623	gal/sack
						Total Mix Fluid	9.623	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

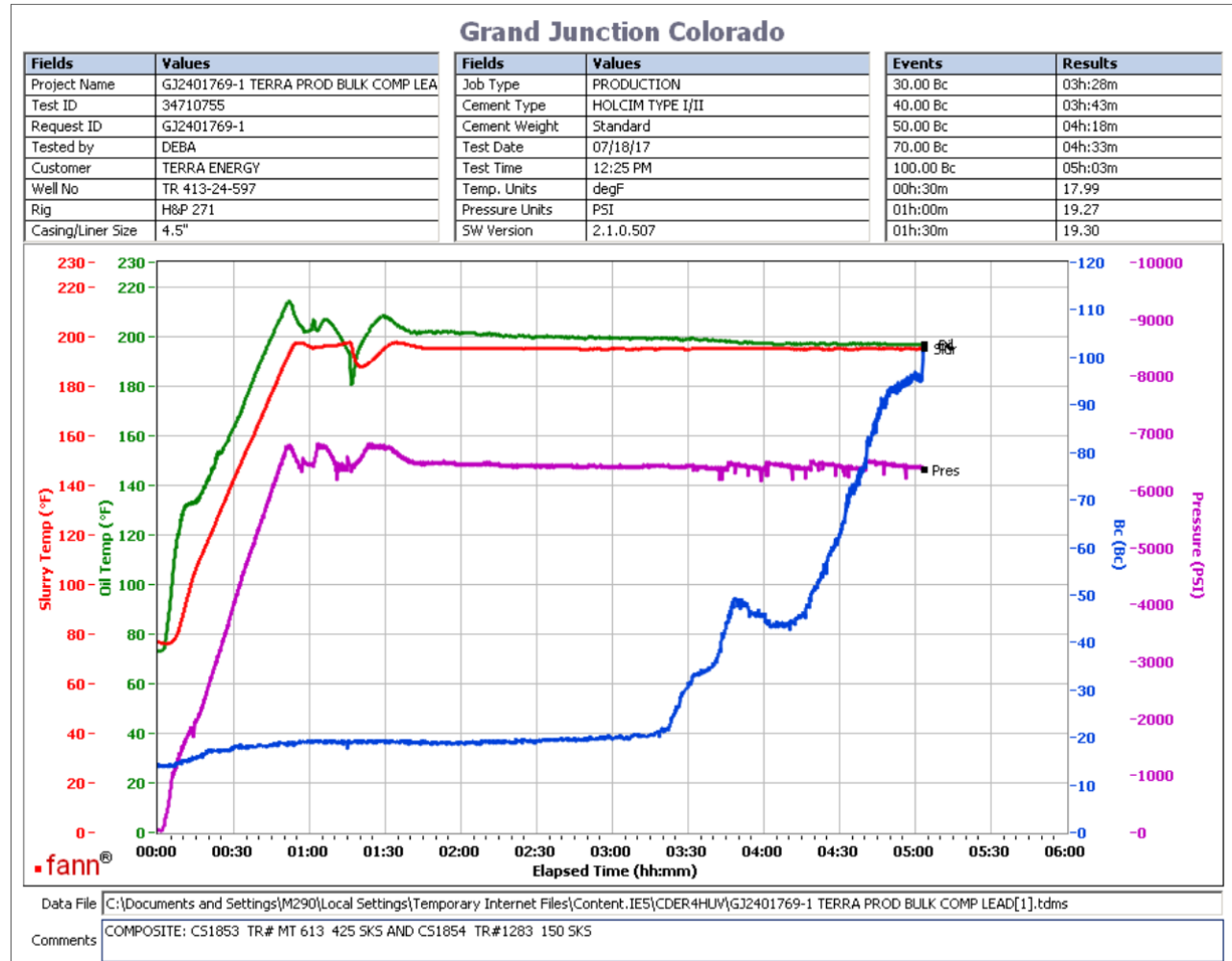
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# **Operation Test Results Request ID 2401769/1**

## **Thickening Time - ON-OFF-ON**

**18/JUL/2017**

Test Temp (°F)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
195	6560	51	3:28	4:18	4:33	5:03	14	61	15	14



Total sks = 575

Composite:

CS1853 TR MT613 425 SKS

CS1854 TR 1283 150 SKS

Deflection: 14 - 14

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## Job Information

<b>Request/Slurry</b>	2401770/1	<b>Rig Name</b>	H&P 271	<b>Date</b>	17/JUL/2017
<b>Submitted By</b>	Aaron Katz	<b>Job Type</b>	Production Casing	<b>Bulk Plant</b>	Grand Junction
<b>Customer</b>	Terra Energy Partners	<b>Location</b>	Garfield	<b>Well</b>	TR 413-24-597

## Well Information

<b>Casing/Liner Size</b>	4.5 in	<b>Depth MD</b>	10654 ft	<b>BHST</b>	124°C / 256°F
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<b>Pressure</b>	6560 psi				

## Drilling Fluid Information

<b>Mud Supplier Name</b>	Baroid	<b>Mud Trade Name</b>	BARADRIL-N	<b>Density</b>	10.4 lbm/gal
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## Cement Information - Tail Design



<u>Conc</u>	<u>UOM</u>	<u>Cement/Additive</u>	<u>Sample Type</u>	<u>Sample Date</u>	<u>Lot No.</u>	<b>Cement Properties</b>		
		NeoCem HT Tail				Slurry Density	13	lbm/gal
						Slurry Yield	2.065	ft3/sack
						Water Requirement	9.424	gal/sack
						Total Mix Fluid	9.424	gal/sack
						Water Source	Fresh Water	
						Water Chloride		

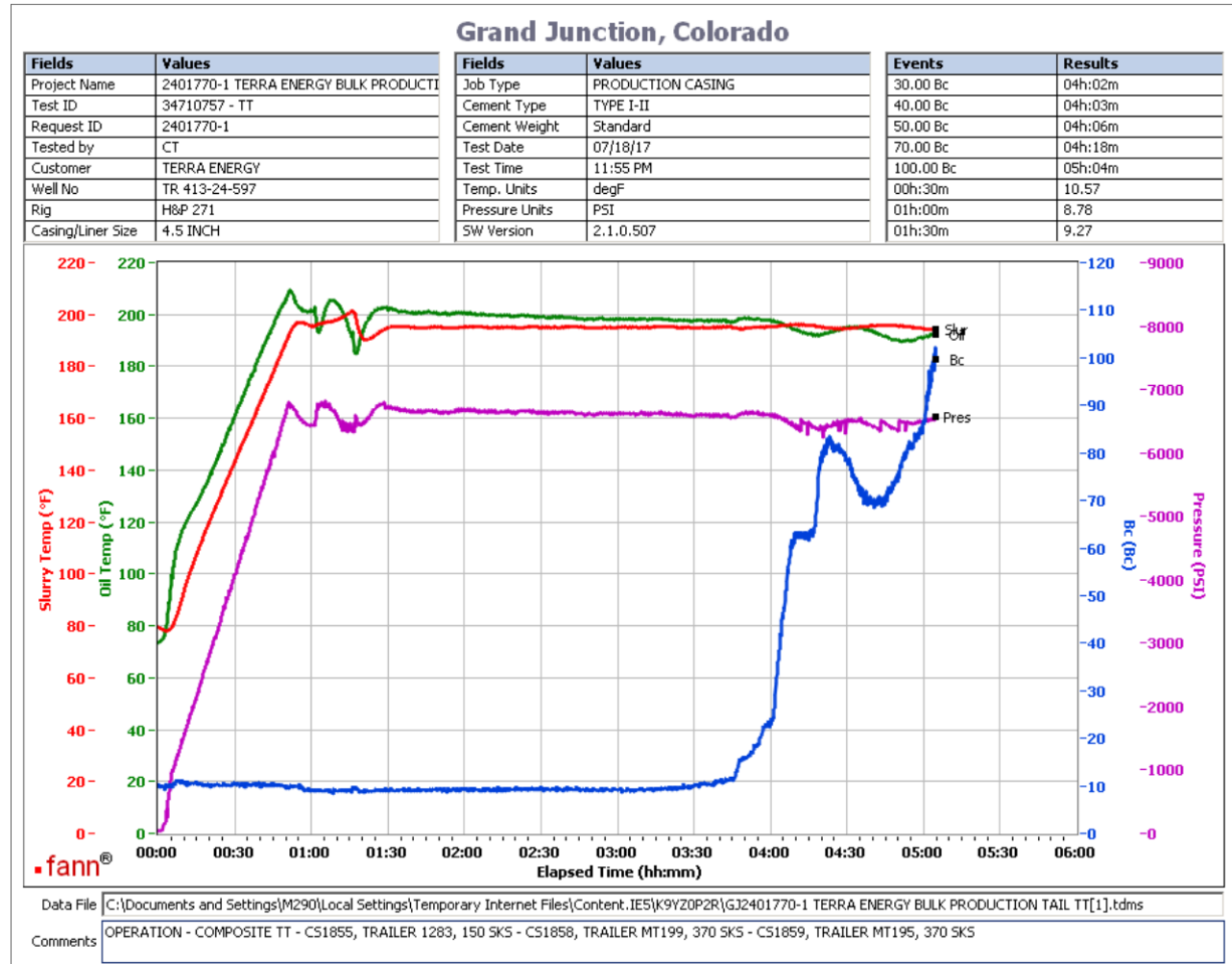
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## Operation Test Results Request ID 2401770/1

### Thickening Time - ON-OFF-ON

18/JUL/2017

Test Temp (°F)	Pressure (psi)	Reached in (min)	30 Bc (hh:mm)	50 Bc (hh:mm)	70 Bc (hh:mm)	100 Bc (hh:mm)	Start Bc	Stirring before stop (mins)	Static Period (min)	Peak reading (BC)
195	6560	51	4:02	4:06	4:18	5:04	11	61	15	11



Total sks 890

Composite:

CS1855, Trailer 1283, 150 sks

CS1858, Trailer MT199, 370 sks

CS1859, Trailer MT195, 370 sks

Deflection: 9 - 11

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